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Photograph of the Cluster H *VIII.* 76 *and of a new Nebula in Cygnus.* By Isaac Roberts, D.Sc., F.R.S.

The photograph of the cluster H VIII. 76 R.A., $20^{\rm h}\ 51^{\rm m}\cdot5$, Decl. 46° 53′ north, and of a new nebula in *Cygnus* was taken with the 20-inch reflector on 1895 September 13, with an exposure of the plate during two hours. The copy now presented is enlarged to the scale of 1 millimetre to 24 seconds of arc.

The cluster is N.G.C. No. 6991, G.C. No. 4615, *h* 2091, and is described by Sir J. Herschel as large, poor, very little compressed.

The photograph shows that there is no cluster, in the ordinary, accepted use of the word, on the plate, but that there are densely crowded areas of stars in this as well as in many other regions of the sky; and I may here remark that Herschel's 8th class of clusters would be better designated as rich fields of stars. This designation, again, could be only relative, for an increase in the magnifying power of the observing instrument or of the photo-camera would separate the stars so that our ideas of a relationship between them would be entirely changed.

The new nebula (supposed to be here recorded for the first time) is in R.A. $20^{\rm h}\ 50^{\rm m}\ 56^{\rm s}$, Decl. 46° 51′·9 north (epoch 1855), and it either involves, or else just touches, the star D.M. No. 3111 zone + 46°. It is about $6\frac{1}{2}$ minutes of arc in length from north to south, and 5 minutes of arc in breadth from *preceding* to *following*, irregular in outline and with many stars, both bright and faint, involved or in alignment with it. The nebulosity has no regular structure and is of a fleecy character, the margins gradually fading into invisibility.

The photograph shows that this nebula is surrounded by stars more numerous than is generally the case in the regions contiguous to nebulæ.

The Orbit of Σ 1879. By T. Lewis.

Observations of this binary are very scarce, although it has been known since 1827, when it was measured by W. Struve. This summer I had an opportunity of examining it with the 28-inch Greenwich refractor, and have deduced a provisional orbit principally to call attention to it. The position for 1900 is

R.A. $14^{\rm h}\ 41^{\rm m}\ 20^{\rm s}$ N.P.D. 79° 55′ Mags. 7·7 and 8·5.

The residuals are in some cases large but are well within the discordances of the observations. The difficulty of the object since 1850 is sufficient to account for these variations, indeed the

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law of equal areas is better satisfied than I had expected. The comparison of the apparent ellipse with observed places gives the best general idea.

The elements are

τ	1865·0	☊	64° 1′
ρ	146·9 years	γ	67 48
ϵ	·581	λ	222 47
α	0″·92	μ	−2°·45

Below is a comparison with all the observations I have been able to find, and a short ephemeris.

Date.	Position angle Observed.	Position angle Calculated.	Distance Observed.	Distance Calculated.	Observer.
	°	°	″	″	
1827·27	69·7	67·9	1·12	1·15	W. Struve
1828·32	65·8	67·3	1·22	1·13	W. Struve
1834·39	66·3	64·3	1·21	1·03	W. Struve
1842·42	59·2	59·0	0·80	0·85	Mädler
1843·42	57·2	58·2	0·69	0·82	Mädler
1851·41	43·5	47·9	0·45	0·55	Mädler
1877·40	30· ±	218·0	0·42	0·43	Burnham
1877·44	219·1	218·0	0·37	0·43	Schiaparelli
1877·46	222·9	217·9	0·34	0·43	Dembowski
1878·39	206·6	214·7	0·39	0·43	Dembowski
1878·44	217·1	214·6	0·42	0·43	Burnham
1882·50	183·5	198·9	0·35	0·39	Schiaparelli
1883·47	177·9	194·0	0·38	0·39	Schiaparelli
1883·55	209·4	193·9	0·31	0·39	Engelmann
1884·50	187·3	190·0	0·37	0·38	Schiaparelli
1885·48	179·5	185·4	0·41	0·37	Schiaparelli
1886·51	174·2	180·8	0·50	0·37	Schiaparelli
1887·44	173·1	175·8	0·38	0·37	Hall
1887·49	173·1	175·7	0·35	0·37	Schiaparelli
1895·44	144·6	140·5	0·40	0·41	Lewis
...	...	...	...	...	
1896·5	...	137·0	...	0·43	
1897·5	...	133·6	...	0·45	
1898·5	...	130·3	...	0·47	
1899·5	...	127·2	...	0·48	
1900·5	...	124·6	...	0·50	

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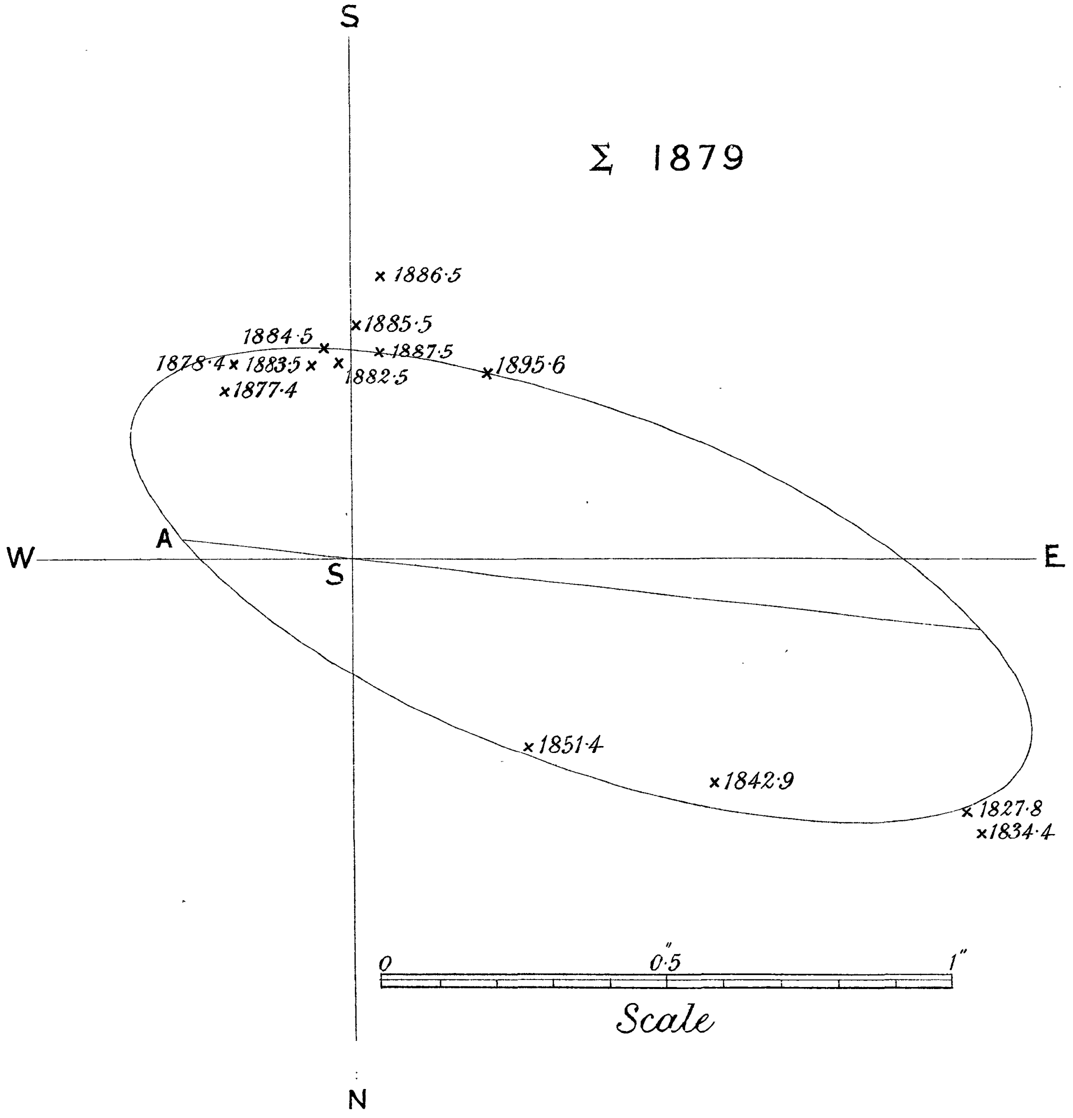

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Observations of the Variable Star T Centauri.

By Lieut.-Col. E. E. Markwick.

This star proves to be an interesting variable on account of the large range in variation, 4½ magnitudes, and its comparatively short period. My observations, in continuation of those on p. 247, vol. v. *Journal B. A. Assoc.*, are as follows. They were usually made with a binocular magnifying five times, supplemented by a 2¾-inch refractor, power 28. The comparison star, for the brighter stages, was L 5649, which is 23′ S of the var., and rated $7^{m}\cdot0$ in the *Uranometria Argentina.* The difference in brightness was estimated in steps, or tenths of a magnitude.

1894.	m		m		m		m
Dec. 29	7·1	May 14	8·0	June 3	6·0	June 23	6·5
1895. Jan. 2	7·2	15	7·4	4	6·0	24	6·6
6	7·5	16	7·4	5	5 to 5½	26	6·65
29	9	17	7·3	6	5·5	27	6·7
Apr. 19	9·25	19	7·3	8	5·3	29	6·8
20	9·6	20	7·25	10	5·5	30	6·7
21	9·75	21	7·2	11	6·25	July 1	6·8
22	9·75	22	7·2	12	6·2	2	6·8
25	10	25	7·05	13	6·3	3	6·8
26	10	26	7·0	14	6·2	8	7·1
May 3	9·7	28	6·8	16	6·0	11	7·5
5	9·6	30	6·25	17	6·25	12	7·75
6	9·3	31	6·25	19	6·27	13	7·75
7	9·22	June 1	6·25	20	6·3	14	7·75
8	8*	2	6·0	21	6·4	17	8·5
						21	9·5

I attach a drawing showing the light-curve in 1894 and 1895 as deduced from the previous and the 1894 observations.

Neither of these, it will be observed, gives a complete cycle of variation, and it is somewhat difficult to arrive at the period. In the above-quoted paper seventy-three days was thought to be something near the truth, and from the additional observations now obtained it would appear that this is so.

The star was observed $6^{m}\cdot25$ on 1894 May 26, but there was a gap in the observations of seventeen days prior to this, the next preceding observation being 8^{m} on May 9. Now an in-

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* Very bright moonlight, making observation difficult.